

Validation of Navy Quality of Life Retention Models

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Abstract

Understanding factors affecting service member retention intent is essential for military decision makers to maintain levels of unit readiness. Wilcove, Schwerin, and Wolosin (2003) used data from the 1999 Navy quality of life (QOL) survey to develop an exploratory model of work and nonwork factors to determine how QOL domains affect retention intent. The current study uses data from the 1999 Navy QOL Survey ($N = 8,165$) and new data collected from the 2002 Navy QOL Survey ($N = 5,114$) to determine the consistency of the work/nonwork life model with the 2002 Navy QOL Survey data and extend previous research by including actual retention behavior in the Wilcove et al. model. Models were tested among marital status, family status, and organizational status groups with results supporting Wilcove et al. and modifications to the model to include retention behavior reflect the first working model of QOL and Sailor retention.

Keywords: military, retention, retention intent, structural equation modeling, quality of life

Validation of Navy Quality of Life (QOL) Retention Models

The Services (i.e., Army, Navy, Marine Corps, and Air Force) of the U.S. Department of Defense (DoD) have the distinct challenge of maintaining an adequate quantity and quality of a workforce that exceeds 2.25 million people (Office of the Under Secretary of Defense for Personnel & Readiness, 2004). The Services counter personnel losses (e.g., retirement and voluntary and involuntary separation from active duty) with accessions. For example, in fiscal year 2005, DoD had the goal of recruiting, evaluating, and accessing nearly 300,000 people into the military (approximately 170,000 active duty and 130,000 guard and reserve component personnel) (Office of the Assistant Secretary of Defense [Public Affairs], 2005). Because of the size of the military workforce, seemingly minor policy changes can have dramatic effects on service member commitment and retention. A better understanding of the life needs that are most strongly related to retention can aid policy development by improving the precision of personnel policy adjustments while avoiding the unintended negative consequences.

Studies of quality of life (QOL) and retention are important for the military to (1) understand work and nonwork life needs associated with retention and military family support; (2) facilitate organizational commitment by reinforcing the reciprocal relationship between the military and military personnel and their families; (3) create analytic models to better understand the relationship between life needs, retention intent, and retention behavior so we have an estimate of the strength of the relationship between intent and behavior and confidence in using retention intent as an outcome variable; and (4) use results from modeling studies to develop policy, incentives, and programs that improve retention in the military, which is especially important for military organizations that rely on an all-volunteer force. Researchers have set forth a number of perspectives over the years in the study of QOL and retention among military personnel. These perspectives include various general psychological theories that seek to explain the factors influencing attitudes, choices, and resulting behavior. This section provides an overview of theoretical and applied research that seeks to explain how and why people make the career choices they do.

Theory of Planned Behavior (TPB)

One of the most promising approaches to studying the correspondence between attitudes, opinions, and actual behavior over the past 20 years has been the theory of planned behavior

(TPB) (Ajzen, 1988; Ajzen, 1991). The theory, based on the earlier “theory of reasoned action” (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), assumes that the attitudes and opinions that people hold drive the decisions they make and the actions they choose. The theory is based on three central assumptions: 1) human beings are rational and they use the information available to them, 2) people consider the implications of different courses of action before they make a decision, and 3) these decisions result in behavioral intentions or choices to act that drive people’s behavior (Ajzen, 1996).

The most important factor in predicting behavior is a person’s intentions. Researchers believe these behavioral intentions are formed by a combination of attitudes, opinions, subjective norms (i.e., past experience and beliefs about the likely outcome of action), and the trade-offs to the individual. Behavior is believed to result from the consideration of these factors and the resulting motivation to act (Ajzen, 1985). If people perceive the outcomes as being positive, they are likely to have positive attitudes toward performing the action and will express behavioral intentions to do so. The opposite is also true: when people perceive the outcomes as being negative or unpleasant, they are less likely to perform the action. While acknowledging that not every situation allows an individual to exercise complete decision control, the theory suggests that the consideration of actions, consequences, and desired outcomes has an impact on human beings’ decision making (Ajzen, 1996).

The TPB can be applied to the retention decisions (i.e., staying or leaving) of people in career organizations. In this setting, it is believed that most people review career choices, the positive and negative consequences of these choices, and the likelihood of whether they will achieve their desired outcomes (e.g., promotion, raise, new type of work). As a result, behavioral intentions are formed over time and are believed to have an impact on future decision making.

When military personnel consider retention plans, most cannot simply decide to stay or leave the military at any time, but rather must wait for terms of enlistment or commitment to expire before they can act. As a result, behavioral intentions are formed over periods of time ranging from 2 to 8 years depending on their term of service. If the TPB were applied to military retention behavior, military personnel develop their behavioral intentions over time as a result of experience, beliefs about the outcomes of their choices, and expectations of success in achieving desired outcomes. Thus, retention decisions are believed to be a result of the behavioral intentions that have been developed over time.

Retention Intentions and Behavior

Consistent with the propositions of the TPB, a number of different approaches have been applied to the study of employee retention decisions. These approaches include many of the same variables—job satisfaction, thoughts of quitting, intentions to search for new work, and the probability of achieving alternatives—all leading to intentions to quit. These intentions to quit are thought to predict actual turnover behavior. Models proposed by Mobley, Horner, & Hollingsworth (1978); Dalessio, Silverman, & Schuck (1986); Bannister & Griffeth (1986); Hom, Griffeth, & Sellaro (1984); and Hom, Caranikas-Walker, Prussia, & Griffeth (1992) use these variables in various configurations. These models describe processes very similar to those described by Ajzen (1988, 1991): people are prompted by factors such as job satisfaction (or dissatisfaction) to think about other work alternatives. If the person continues to think of other possible jobs and these alternatives are likely to help them achieve their desired outcomes (e.g., more pay, better working conditions), they are more likely to form an intention to quit (Mobley et al.).

A key to most of these models is that employees make comparisons between their current job and other alternatives. It is believed that these comparisons occur occasionally but may be spurred on by events such as being passed over for a promotion, difficult work conditions, or other factors that may lead to job dissatisfaction (Hom et al., 1992; Sager, Griffeth, & Hom, 1998). Some authors have also suggested that certain personality characteristics may play a role in either activating concerns about job satisfaction or mediating the impact of thoughts about quitting and later behavioral intentions to do so (Allen, Weeks, & Moffit, 2005). Some of these personality characteristics include self-monitoring (Gangestad & Snyder, 2000), locus of control (Bateman & Crant, 1993; Spector, 1982), proactive personality (Crant, 2000), and risk aversion (Allen, Renn, & Moffit, 2003). Although the research into personality characteristics that predict behavior has been interesting, it has been inconsistent: some studies have found significant relationships (e.g., Allen et al. [2005]; Barrick & Mount [1991]) while others have not (e.g., Hom & Griffeth [1995]).

A number of the approaches to understanding employee retention decisions described above have been applied to the military. However, the results of these studies have been mixed. For instance, a meta-analysis by Steel and Griffeth (1989) found only weak correlations between perceived employment alternatives and turnover behavior by military personnel. Believing that

civilian comparisons played a significant role, the authors focused their critical analysis on problems with how workplace concepts such as turnover behavior was operationalized and measured. In contrast, a later study by Steel (1996) found significant relationships between perceived and objective (actual) job availability in the civilian job market and actual retention behavior.

Although the evidence is strong that intentions are probably the best predictor of behavior (Armitage & Conner, 2001; Ajzen, 1996), military personnel (and civilians) often behave in ways that are not consistent with their stated turnover (or career) intentions. As a result, many authors have applied various frameworks in studying retention in military personnel, including applying general models of employee retention (e.g., Capon, Chernyshenko, & Stark [2004]), models of job satisfaction and retention (Gade, Tiggler, & Schumm, 2003; Sanchez, Bray, Vincus, & Bann, 2004; Janega & Olmsted, 2003; Michael & Olmsted, 2002), and recently models of QOL and retention (e.g., Glaser [1996]; Kerce [1995]; Kerce [1998]; Kerce, Sheposh, & Knapp [1999]; Hindelang, Schwerin, & Farmer [2004]; Wilcove, Schwerin, & Wolosin [2003]).

The results of these studies have been mixed as well. For instance, in applying a general model of employee retention, Capon et al. (2004) found that civilian models do not fit well without modifying some of the proposed relationships to accommodate unique aspects of the military workplace. Other studies applying models of job satisfaction and retention found moderately positive support for the relationship between job satisfaction and retention (Janega & Olmsted, 2003; Michael & Olmsted, 2002). Results of these studies are somewhat limited in that models explain an insufficient amount of the variance in retention, and retention behavior was recorded only 12 months after measuring retention intent. This is problematic because U.S. military terms of enlistment and officer commitment are typically 3 or more years in length. Studies exploring the relationship between QOL and retention intent in the military (Hindelang et al., 2004; Wilcove et al., 2003) appear to be promising because they incorporate both work and nonwork characteristics of life, thus providing better coverage of factors likely to affect retention.

QOL as a Predictor of Retention Intent

Of the variety of approaches to studying the relationship between attitudes, intentions, and behavior that have been applied to the military, the focus on QOL and retention appears to be the most promising. This is partly because of the nature of the military itself. For military personnel, both work and nonwork parts of their lives are significantly affected by their status of being a part of the military. Many personnel live, work, raise their children, shop, recreate, and worship on military bases. They also have a job that obligates them to a term of service/duty and a standard that they must be ready to respond to orders 24 hours a day and 365 days a year. As a result, military personnel cannot simply leave the military anytime they are dissatisfied or find a better job. Military terms of enlistment and officer commitment are typically 3 or more years in length. As suggested by Hom et al. (1992), military personnel may think about and respond to factors that would normally increase the desire to find another job differently than civilian employees. In response, research has sought to focus on factors related to QOL that might cause personnel to consider leaving the military (Glaser, 1996; Kerce et al., 1999; Kerce, 1998; Kerce, 1995; Hindelang et al., 2004; Wilcove et al., 2003).

Research on the impact of QOL on military personnel and their retention decision began in the 1990s with two areas of focus: evaluations of QOL and family support programs (Kerce, 1998; Kerce et al., 1999) and studies to identify life needs (or life domains) and how these life domains affect organizational outcomes (Kerce, 1992; Kerce, 1995; Kerce & Booth-Kewley, 1993). Kerce (1995) was the first to study QOL and subjective well-being with the goal of developing a model that explained the relationship between QOL and retention.

Follow-up studies of QOL and retention intent among military personnel failed to replicate the Kerce (1995) models, leading researchers to consider other models of QOL and retention. Wilcove et al. (2003) applied a model developed by Hart (1999) in which personal nonwork factors (e.g., marriage, personal development, and relationships with children) are direct leading indicators of retention intention, and work-related factors, such as military job satisfaction and shipboard life satisfaction, were found to be indirect influences on retention intent through organizational commitment. Structural equation modeling (SEM) models with this work/nonwork path structure were created for two family/marital status groups—married with children and single without children. Hindelang et al. (2004) tested the Wilcove et al. model using U.S. Marine Corps (USMC) data from the White et al. (1999) USMC QOL survey with

results supporting the generalizability of the Wilcove et al. QOL model. Although modeling results from Wilcove et al. and Hindelang et al. provide great insight into the life needs that affect retention intent, no study to date has modeled the relationship between life needs and actual retention behavior.

Study Objectives

As a continuation of research that seeks to further understand the underlying relationship between attitudes, intentions, and turnover (or retention) behavior, the present study had three objectives. First, the present study replicated and extended the model of QOL and retention previously developed and reported by Wilcove et al. (2003) by replicating the Wilcove et al. model using new Navy QOL Survey new data from the 2002 Navy QOL Survey (Wilcove & Hay, 2004). Second, the study applied more rigorous multigroup SEM approaches (Bryne, 1994, 2001; Kline, 1998) to the Wilcove et al. exploratory model of QOL and retention intent. Third, following the recommendations of Wilcove et al. and Hindelang et al. (2004), this study included actual retention behavior in the work/nonwork life model. Sailor retention data were added to survey data from the 1999 and 2002 Navy QOL Surveys and tested in the Wilcove et al. work/nonwork life models.

Method

Instrument

The U.S. Navy QOL Domains Questionnaire (Wilcove & Hay, 2004; Wilcove & Schwerin, 2002), adapted from Kerce's (1995) Marine Corps questionnaire, captures subjective ratings of satisfaction in various life domains, global QOL satisfaction, organizational commitment, and Sailor demographic data (including retention and career plan ratings). Although there was much similarity between the 1999 and 2002 surveys to facilitate analyses of change over time, there were several significant differences in how some constructs in this modeling study were measured. The two major differences that affect this study are related to the scales and items measuring global QOL and organizational commitment. In the 1999 Navy QOL Survey, global QOL was measured by the Life Characteristics Scale (LCS) (Campbell, Converse, & Rodgers, 1976), the Satisfaction with Life Scale or SWL (Diener, Emmons, Larsen,

& Griffin, 1985), and four individual items designed to capture Sailors' satisfaction with their lives as a whole. Authors of the 2002 Navy QOL Survey opted to reduce the number of global QOL measures and only include the four individual items measuring life satisfaction as a whole. Also, the 1999 Navy QOL Survey used a modified composite measure of organizational commitment from Mowday, Steers, and Porter (1979) and the job involvement scale from Lodahl and Kejner (1965). The authors of the 2002 Navy QOL Survey used a modified version of the affective organizational commitment scale developed by Allen and Meyer (1990). A complete description of the 1999 and 2002 Navy QOL Survey instruments, survey development, and pretesting results can be found in Wilcove and Schwerin and Wilcove and Hay (2004), respectively.

Life Domain Satisfaction

Life domain satisfaction used a life domains approach (Andrews & Withey, 1976; Campbell et al., 1976) in which Sailors were asked to rate their satisfaction in 12 life domains: residence, neighborhood, leisure and recreation, health, friends and friendships, marriage and intimate relationship, relationship with children, relationship with relatives, standard of living/income, professional development/job, personal development, and shipboard life. For the overall life domain satisfaction ratings, individuals are provided with a 7-point Likert-type response scale ranging from 1 (completely dissatisfied) to 7 (completely satisfied) with a midpoint (4) that represents neutral opinions. Since domain measures are indices or effect indicators rather than construct or cause indicators (DeVellis, 2003), Cronbach alpha tests of internal consistency reliability were not conducted for domain index scores. Each life domain section included an item asking respondents how each domain "impacted" retention plans (e.g., "What effect does your shipboard life have on your plans to remain in the Navy?"). Response options were scaled on a 5-point Likert scale where 5 indicates a very positive effect, 1 indicates a very negative effect, and the mid-point indicates no effect on retention plans.

Global QOL

In the 1999 Navy QOL Survey, global QOL is measured by the LCS (Campbell et al., 1976), the SWL (Diener et al., 1985), and four individual items designed to capture life satisfaction as a whole. LCS consists of seven semantic-differential pairs of adjectives, and

respondents indicate where they fit on a continuum of life characteristics (e.g., boring to interesting, disappointing to rewarding). The SWL scale consists of five items that are designed to evaluate individuals' overall satisfaction with their lives. Four life-as-a-whole items ask respondents which of seven response options (e.g., ranging from ideal to miserable, satisfied to unsatisfied, terrible to delighted, and a lot worse to a lot better) best describes their lives. Cronbach alpha for the LCS ($\alpha = 0.92$) and the SWL ($\alpha = 0.91$) indicated that scales possessed adequate internal consistency reliability.

Organizational Commitment

Organizational commitment was measured using an organizational commitment composite with items from Mowday, Steers, and Porter (1979) and the job involvement scale from Lodahl and Kejner (1965). This organizational commitment composite scale consisted of eleven 7-point agree-disagree items, such as "I talk up the Navy to my friends as a great outfit to be associated with," "The Navy is the best of all places for me to work," and "Being a Sailor in the Navy is worth personal sacrifice." Cronbach alpha for the modified organizational commitment/job involvement measure indicated that it possessed adequate internal consistency reliability ($\alpha = 0.87$).

The 2002 Navy QOL Survey used a modified version of the affective organizational commitment scale developed by Allen and Meyer (1990) for measuring employee commitment. The individual questions that make up the organizational commitment scale included five items dealing with the Sailors' desire to spend the rest of their career in the Navy, attachment to the Navy, and a sense of "belonging" in the Navy. Respondents provided ratings of affective commitment on a 5-point agree-disagree scale ranging from strongly agree (5) to strongly disagree (1). Cronbach alpha for the modified organizational commitment/job involvement measure indicated that it possessed good internal consistency reliability ($\alpha = 0.92$).

Demographics, Background, and Career Information

The Sailor demographics and background section comprises both personal background and career plan information. Personal background items include demographic variables such as gender, age, racial background, ethnic background, marital status, and parental status. Career plan information items include variables such as paygrade, designator, rating, billet, and time on

active duty in the Navy. Additionally, two items are provided that asked Sailors about their retention and career plans: “At your next decision point, how likely is it that you will remain in the Navy?” and “How likely is it that you will remain in the Navy until eligible for retirement?”.

Data Collection

The 1999 Navy QOL Survey was mailed to a stratified (by paygrade) random sample of 17,000 Sailors in January 1999 with data collection proceeding through April 1999. Because of a low response rate ($N = 3,565$ surveys or 27 percent adjusted response rate), additional efforts were made to augment the database. Additional surveys were collected using samples at shipboard and shore-based activities ($n = 4,228$), and a Web version of the Navy QOL Domain Questionnaire was administered to 372 personnel at the Navy Personnel Command on a closed intranet. A total of 8,165 Sailors completed the 1999 Navy QOL Survey. Of those completing the questionnaire, 44 percent of respondents completed the mail-out paper and pencil survey, 52 percent completed the on-site administered paper and pencil survey, and 4 percent of all respondents completed the Web-based survey form.

The 2002 Navy QOL Survey was administered in a mixed mode (i.e., paper and Web survey) to a sample of 16,833 Sailors in April 2002 with data collection proceeding through August 2002. A total of 5,114 usable surveys were completed, 3,584 of which were the paper version (70%) and 1,530 (30%) the Web version. The response rate, adjusted for nondeliverables, was 31%.¹

Data Analyses

Methodology—Structural Equation Modeling (SEM)

SEM techniques are employed to evaluate the viability of hypothesized models or *a priori* relationship structures (Loehlin, 1998; Maruyama, 1998).² In the current study, item-level indicators of QOL were modeled in conjunction with item-level indicators of organizational commitment to determine the strongest leading indicator of retention behavior, which is thought

¹ Response rate is calculated using conventions published by the American Association for Public Opinion Research (2004).

to be strongly linked to retention intent. SEM analyses were conducted with the Mplus software (Muthén & Muthén, 2004). Mplus' general latent variable modeling framework enables the simultaneous estimation of continuous and categorical variables (Muthén & Muthén, 2004).

Procedure—Analytic Structure

The current study investigates QOL and military retention behavior through a series of structural models. Analyses are conducted in two analytic parts: Part I—specification/validation models and Part II—multiple group models. Using standard specification/validation (Byrne, 1994, 2001; Kline, 1998) methodology is advantageous because with a single data set researchers are able to specify and validate hypothesized models. Additionally, the specification/validation methodology allows a constraint on the amount of power and avoiding misrepresentative findings due to large sample size.

The goal of analytic Part I is to test the validity of the QOL structure established by Wilcove et al. (2003) with the 1999 and 2002 Navy QOL Survey data. Using both retention intent and retention behavior, the authors validate and extend the Wilcove et al. work/nonwork QOL model. In this model, global QOL is linked hierarchically with the military job factor because earlier exploratory factor analysis found global QOL was measured with a composite score. Because of variation between the 1999 and 2002 Navy QOL Surveys, the current study replaces the QOL composite score with a global QOL factor, and further validation is required.

Procedurally, the current validation analyses employed a rigorous specification/validation methodology (Byrne, 1994, 2001; Kline, 1998). First, the 1999 and 2002 data sets were split by marital status groups as specified in Wilcove et al. (2003). The two marital status groups were married with children (MWC), which included both married and remarried participants, and not married without children (NMWOC), which included participants who are single, divorced, or widowed. Each group-specific data set was randomly split to create the specification and validation data. The Mplus output of the two groups was compared to detect large changes in model fit. If no substantial changes occurred, authors could interpret the previously developed models as accurately representing the current data. This validation allows for the later in-depth investigation of QOL importance differences between enlisted Sailors and officers in Part II.

² Relationships among observed variables (*indicators*) are analyzed through variance-covariance matrices. This results in the identification of a latent variable (*factor*) (Schumacker & Lomax, 1996).

As mentioned previously, the goal of Part II was to establish potential group differences between officers and enlisted Sailors. For each year and marital status group, model fit comparisons were conducted for a completely equal model where all factor loadings and regression paths are constrained to be identical across groups. A second analysis was conducted with all factor loadings and regression paths free to vary between groups. If this second run yielded better fit, then individual loadings and paths were examined to provide insight as to where officers and enlisted Sailors differ.

Results

Part I—Specification/Validation Model

As mentioned previously, the objective of the first analytic part is to employ a standardized approach for work/nonwork model validation (Wilcove et al., 2003) that uses both retention intent and retention behavior data and focuses on two subgroups of Navy personnel: MWC and NMWOC. Changes to the 2002 Navy QOL Survey (e.g., changes in measures of global QOL and organizational commitment) required modifications in the models currently analyzed. These modifications are believed to strengthen the model by providing more indicators (e.g., five rather than two item-level indicators of organizational commitment) of the critical factors. Additional indicators were also added to the 1999 model to make it more robust as well. Figures 1 and 2 illustrate the 1999 MWC and NMWOC work/nonwork models, and Figures 3 and 4 illustrate the 2002 MWC and NMWOC work/nonwork models.³

~ Insert Figures 1 through 4 Here ~

Table 1 provides fit indices for the specification/validation model. Model fit is established through the comparative fit index (CFI), the Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973), the root mean square error of approximation (RMSEA), and the χ^2 statistic. The CFI statistic measures noncentrality improvement while progressing from the null to the hypothesized model (Schumacker & Lomax, 1996), and values are constrained to fall between

zero and one, with values greater than 0.90 indicating good fit. The RMSEA statistic is also based on the noncentrality parameter, and according to Steiger (1989), RMSEA values below 0.1 are considered good fit (Loehlin, 1998).⁴ Interestingly, the TLI, which is computed from the χ^2 statistic, was created to compare factor models but was later extended to structural equation modeling (Schumacker & Lomax, 1996; Bentler & Bonett, 1980). TLI values range from zero to one, with values greater than 0.90 indicating good fit. In the current model, fit statistics indicate that all specification/validation analyses are similar. All χ^2/df ratios maintain minimal differences, as well as the CFI and TLI values remaining virtually identical. Finally, the RMSEA values differ only slightly from specification to validation, and in some cases (i.e., 1999 MWC) are identical. Therefore, the work/nonwork model established by Wilcove et al. (2003) is appropriate for both the 1999 and 2002 data sets.

~ Insert Table 1 Here ~

Part II—Multiple Group Model

To extend the Wilcove et al. (2003) research basis, Part II explores differences between officers and enlisted Sailors in various aspects of QOL, and the relationship between QOL and retention behavior. Table 2 provides results of the 1999 and 2002 multiple group models. The first section of Table 2 corresponds to MWC personnel data collected in 1999, and the fit indices are virtually identical between the constrained to equality analysis and the free to vary analysis described above. The χ^2/df ratio is approximately 10 points in both cases, and the CFI, TLI, and RMSEA are constant. This indicates that, in the 1999 MWC data, officers and enlisted Sailors possess very similar attitudes about their military QOL and its relationship to their decision to remain in the Navy.

~ Insert Table 2 Here ~

The 1999 NMWOC results are also presented in Table 2. Because of extreme nonnormality and missing data, more robust estimation techniques (i.e., weighted least-squares

³ The figures are in RAM (reticular action model) (McArdle & McDonald, 1984) notation where an oval represents a latent variable (i.e., the factor). The line of rectangles or squares represents measures (i.e., indicators) hypothesized to represent various aspects of QOL. The arrows proceeding from the latent factor (i.e., circle) to the manifest variables (i.e., squares) indicate relationships between indicator variables and the latent factor. These relationships are termed factor loadings. Residual variance (not depicted here for visual parsimony), typically linked to the manifest variables, represents the portion of variability not associated with the latent factor.

⁴ Steiger (1980) considers RMSEA values below 0.05 as exhibiting excellent fit.

using means and variances; WLSMV) are required. By using WLSMV in Mplus, the authors were able to analyze the data, but the output χ^2 is not appropriate for comparison. In this particular analysis, model fit is assessed using the remaining fit indices (e.g., CFI, TLI, and RMSEA). With respect to the CFI and TLI indicators, the *constrained to equality* model has the best fit. This also indicates that officers and enlisted personnel are very similar in the 1999 NMWOC data set.

The fit indices for the 2002 sample in Table 2 show differences between the constrained to equality and the free to vary analytic sets. A slight reduction in the χ^2/df ratio (equality = 9.91; free = 9.1), as well as a slight increase in the CFI statistic (equality = 0.94; free = 0.95) in Table 2, indicates the existence of variation in attitudes about QOL and its relationship to retention in the MWC sample. Table 3 provides the factor and path loadings for officers and enlisted Sailors for the multiple group models.⁵ With respect to the directional paths for the 2002 analysis in Table 5, personal factors (i.e., nonwork factors) of officers appear to show a stronger effect (on reenlistment intent) than personal factors of enlisted Sailors. Likewise, officers' military job factors show a stronger effect on organizational commitment. In contrast, the officer effect from organizational commitment to reenlistment intent is weaker than the enlisted Sailors' effect. Additionally, the relationship between retention intent and retention behavior is stronger in the enlisted Sailor model than in the officer model.

~ Insert Table 3 Here ~

Shifting focus to the latent variable structures, we see a meaningful amount of variability in the loadings between officers and enlisted Sailors. Officers tend to show a stronger relationship between the personal factors and health, shipboard life, and military job impact. In contrast, enlisted personnel tend to show stronger relationships between standard of living (i.e., income) and the personal factor. With respect to the military job (i.e., work) factor, officers have a stronger relationship with military job satisfaction, and enlisted Sailors have a stronger relationship with military job impact.

In the final multiple group analysis on the 2002 NMWOC sample, a slight reduction in the χ^2/df ratio (equality = 9.43; free = 8.49), as well as a slight increase in the CFI statistic (equality = 0.96; free = 0.97), indicates some variation in personnel attitudes about Navy work

and nonwork factors and the relationship with retention behavior. Table 3 also provides the 2002 NMWOC multiple group results. With respect to relational paths, enlisted personnel show a stronger effect of the Personal Factor on retention intent than officers. In contrast, officers' organizational commitment on retention intent shows a stronger effect than enlisted Sailors' organizational commitment. Finally, enlisted personnel show a stronger effect of retention intent on retention behavior than officers.

The structure of the QOL factors differs between enlisted personnel and officers in the 2002 NMWOC sample. Enlisted Sailors show a stronger relationship between personal factors and health, and officers show a stronger association between personal factors and shipboard life. With respect to the military job factor, enlisted Sailors show a stronger relationship with the shipboard life factor than officers.

Discussion

Results from this study are the first models of work and nonwork life in a workplace retention model that is based in theory (Ajzen, 1991; Ajzen & Fishbein, 1980; Hart, 1999), includes both retention intent and actual retention behavior, and was tested (Hindelang et al., 2004; Wilcove et al., 2003) and validated on the primary population of interest (military personnel). Previous QOL/retention models have either failed when replication was attempted or lacked a theoretical framework to describe retention behavior. Although the Kerce (1995) QOL model advanced the use of QOL survey data for research and policy support, the model itself could not be replicated (Wilcove et al., 2003). Ditton et al. (2003) modeled how life domains affected global QOL and retention plans but lacked a theory of behavior as a foundation for the model. This study incorporates both using a model that was developed with 1999 Navy QOL data (Wilcove et al., 2003), validated using 2002 Marine Corps QOL data (Hindelang et al., 2004), and validated/extended using QOL data from the 1999 and 2002 Navy QOL Surveys and actual Sailor retention data.

Each of these retention models identifies key work and nonwork life factors that affect Sailor retention. For Sailors with intimate partners (e.g., spouses and long-term relationships) and children, relationships with spouse/partner and children, personal development, standard of

⁵ Please note that the direct regression path from the personal factor to organizational commitment was removed because it often has a low negative loading; its removal provides a more theoretically consistent and parsimonious

living/income, military job satisfaction, and shipboard life were the key factors affecting retention plans and behavior. For unmarried Sailors without children, family factors dropped out and personal development, standard of living/income, military job satisfaction, and shipboard life remained as key retention drivers. While this may seem intuitive, this is the first model that quantifies the impact of these life factors on retention.

Results also provide preliminary support for using the general TPB framework for studying retention behavior. Although the authors do not claim that the study provides a complete test of the theory, we did find it useful as an organizing principle to structure our thinking about what factors affect the retention choices and behavior of military personnel. Results suggest that military personnel hold attitudes and opinions consistent with what would be expected by theory to drive the development of behavioral intentions regarding retention. These behavioral intentions, in turn, are able to explain a significant proportion of the variance in retention behavior. We recommend that future research consider the use of the TPB perspective to guide both the development and use of models of employee retention.

Results from this study demonstrate the value of using personal identifiers in personnel survey research. The use of identifiers, such as social security numbers (SSNs), enable researchers to conduct follow-up studies that seek to explore the relationship between attitudes expressed at one point in time and subsequent behavior. In the case of the Navy, past research by Olmsted (Michael & Olmsted, 2002; Olmsted, 2001; Janega & Olmsted, 2003) has shown a moderate predictive relationship between measures of job satisfaction, retention plans, and actual retention behavior. This research has been enabled by the regular collection of SSNs on some of the Navy's largest personnel surveys—including the Navy QOL Survey and Navy-wide Personnel Survey (Wilcove & Hay, 2004; Olmsted & Underhill, 2003). Although researchers were somewhat concerned that collecting SSNs might negatively affect the participation and response of Sailors in these surveys, experimental evidence suggests that it does not. This appears to be partly because military personnel use SSNs as their main source of identification in their work life every day (Newell, Rosenfeld, Harris, & Hindelang, 2004; Olmsted, 2001), so SSNs may not be regarded as sensitive for military personnel as they are for nonmilitary people.

Study results have implications for Navy personnel policy makers in that these models could be adapted to inform strategic planning, personnel policies, and shipboard habitability

initiatives. For example, knowing that nonwork factors such as relationships with intimate partners and children are key factors that affect Sailor retention, the Navy could give Sailors the option of having their selective reenlistment bonus (SRB) delivered as paid leave rather than money. Navy personnel policy makers could also use these models to examine the effect of increasing satisfaction or decreasing impact of a life need area in one life area on retention. For example, if shipboard habitability were improved and satisfaction increased, how would that affect Sailor retention? One could then contrast the cost/benefit trade-off of investments to outcomes.

Recommendations for Future Research

This study focused on the work/nonwork model tested by Wilcove et al. (2003) and added retention behavior as a final outcome. However, theoretically based alternative models could be tested in relation to the Wilcove et al. model to explore how life domains affected global QOL and retention plans (similar to the Ditton, Bolmarcich, Moore, Webb, & Quinlan [2003] models). One family of alternative models, called segregation models, suggests that the domains can be considered separately (i.e., without relationship); therefore, military job would have an affect on retention behavior independent of the affect of personal factors. In his research on work and nonwork satisfaction, Hart (1999) found that the segregation model better represented the data because of parsimony; however, the model fit was not statistically significantly different from the spillover model. Another family of models is the spillover effect models (Hart, 1999; Crouter, 1984; Staines, 1980). Spillover models allow attitudes and beliefs in one domain (e.g., military job) to carry over into another domain (e.g., personal) and test the effect on QOL and retention behavior.

The current work/nonwork model tested in this study is one type of spillover model in which the two QOL domains are related. The authors plan to expand this spillover model framework in future research to explore directionality. For example, the current study demonstrated that personal and job domains are related. However, no findings definitely indicate which domain precedes the other. Does personal life quality affect an individual's work satisfaction, or is it the reverse? Finally, some might suggest the bottom-up or top-down modeling methodology to explore QOL. However, these models require personality data that are not collected currently. State and trait data are a necessary component to pull out confounding

effects of personality. Future analyses comparing the work/nonwork model to alternatives may further validate the theoretical basis of the Wilcove et al. model, as well as better clarify the relationship between perceived QOL and the decision to remain in the Navy.

Additional modeling studies could be conducted to explore models for populations of interest in which one would expect differences or include new survey data that might improve the models. For example, one might expect the impact of some life domains on retention to be greater for women than for men. New variables on the impact of spiritual development were included on the 2002 Navy QOL Survey, and those data warrant further study. Also, this measurement approach could be tested with military personnel from other branches of service (e.g., Army and Air Force) and with civilian work sectors (e.g., police and fire protective services, private security contractors) that have similar characteristics to the military (e.g., all volunteer force, potential for personal injury, periods of family separation, high cost for recruiting, significant impact on organizational mission because of retention problems, and job affects both work and nonwork life).

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Table 1

1999 and 2002 Specification/Validation Model

Data set	Fit index	Actual result				Desired result
		Married with children (MWC)		Not married without children (NMWOC)		
		Specification	Validation	Specification	Validation	
1999 Navy QOL Survey Data	$\chi^2 (df)$	3,147 (398)	3,527 (435)	2,605 (369)	2,046 (406)	Similar ratio given specification & validation models
	CFI	0.97	0.97	0.98	0.98	>.90
	TLI	0.97	0.97	0.98	0.98	>.90
	RMSEA	0.06	0.06	0.05	0.06	≤ 0.05
2002 Navy QOL Survey Data	$\chi^2 (df)$	1,517 (202)	2,080 (231)	899 (181)	1,307 (210)	Similar ratio given specification & validation models
	CFI	0.97	0.97	0.98	0.98	>.90
	TLI	0.96	0.97	0.98	0.98	>.90
	RMSEA	0.09	0.1	0.08	0.1	≤ 0.05

Table 2

1999 and 2002 Multiple Group SEM Results

Data set	Fit index	Actual result				Desired result
		Married with children (MWC)		Not married without children (NMWOC)		
		All equal	All relaxed	All equal	All relaxed	
1999 Navy QOL Survey Data	$\chi^2 (df)$	9,732 (975)	9,069 (940)	816 (55)*	2,275 (119)*	Reduced ratio given alternative models
	CFI	0.96	0.96	0.97	0.92	>.90
	TLI	0.97	0.97	0.98	0.97	>.90
	RMSEA	0.06	0.06	0.1	0.1	≤ 0.05
2002 Navy QOL Survey Data	$\chi^2 (df)$	5,363 (541)	4,677 (514)	4,662 (494)	3,977 (468)	Reduced ratio given alternative models
	CFI	0.94	0.95	0.96	0.97	>.90
	TLI	0.95	0.95	0.97	0.97	>.90
	RMSEA	0.1	0.1	0.1	0.1	≤ 0.05

^aEstimated with WLSMV because of extreme nonnormality and missing data—cannot compare χ^2 .

Table 3

1999 and 2002 Multiple Group SEM Path Detail

	Married with children		Not married without children	
	Enlisted	Officer	Enlisted	Officer
1999 Multiple Group SEM Path Detail - Path Loading				
Personal to reenlist	0.65	0.69	0.38	0.60
Military job to organizational commitment	0.62	0.70	0.54	0.45
Organizational commitment to reenlistment	0.18	0.14	0.39	0.27
Reenlistment to behavior	0.31	0.30	0.52	0.48
Personal to organizational commitment	0.29	0.20	0.36	0.43
Personal with military job	0.90	0.90	0.75	0.75
2002 Multiple Group SEM Path Detail - Path Loading				
Personal to reenlist	0.48	0.59	0.54	0.39
Military job to organizational commitment	0.91	0.86	0.89	0.88
Organizational commitment to reenlistment	0.48	0.33	0.47	0.66
Reenlistment to behavior	0.41	0.24	0.55	0.38
Personal with military job	0.94	0.94	0.89	0.89

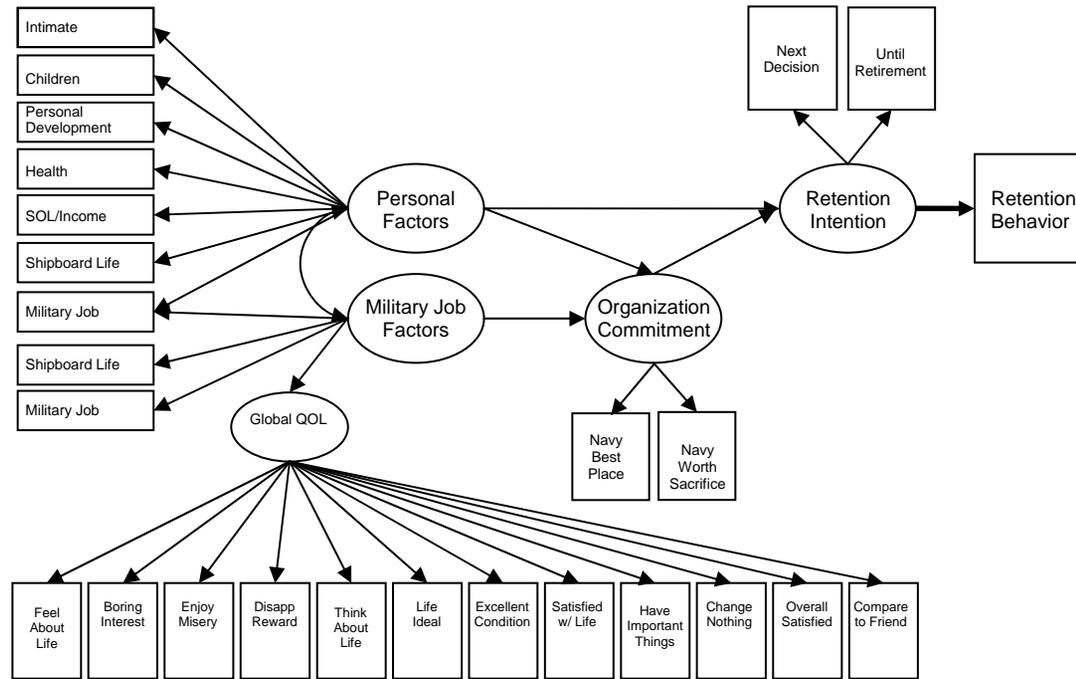


Figure 1. 1999 work/nonwork model for married Navy personnel with children (MWC).

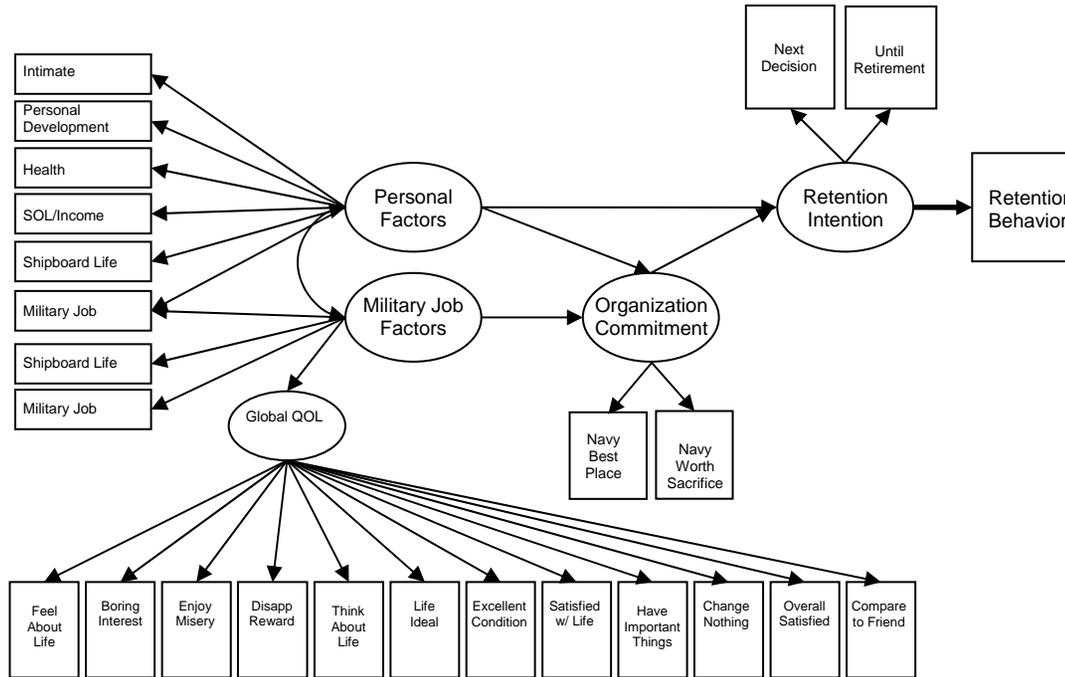


Figure 2. 1999 work/nonwork model for not married Navy personnel without children (NMWOC).

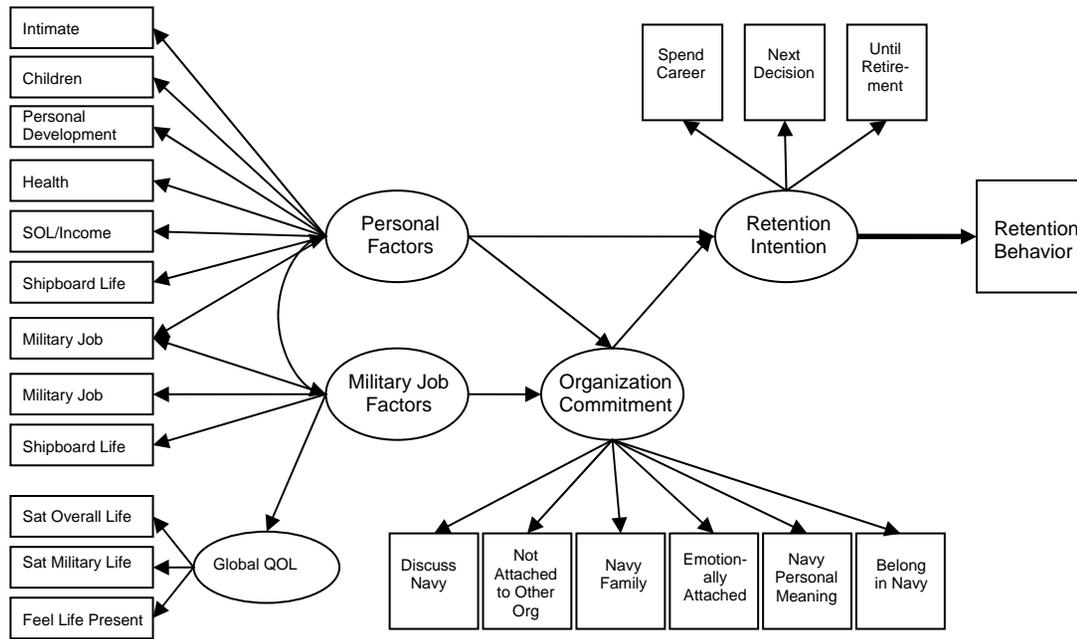


Figure 3. 2002 work/nonwork model for married Navy personnel with children (MWC).

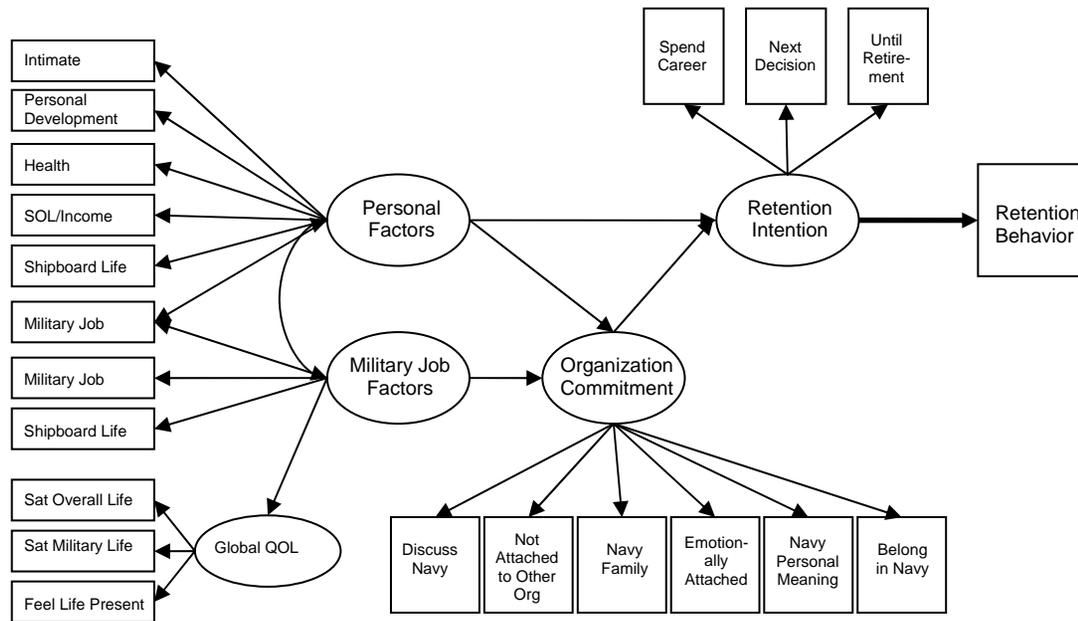


Figure 4. 2002 work/nonwork model for not married Navy personnel without children (NMWOC).